

# Wooden Spool Racer



## **Kit contains:**

- 1 rubber band
- 1 wooden spool
- 1 pencil
- 1 rubber band
- 1 washer
- 1-inch length of coffee stirrer

**You will need:** tape, a pencil sharpener, a narrow poking implement (e.g., a nail or a chopstick), and coloring supplies.



**MORTON GROVE PUBLIC LIBRARY**  
6140 Lincoln Avenue, Morton Grove, IL 60053  
Youth Info Desk: 847-929-5102 | [mgpl.org](http://mgpl.org)

# INSTRUCTIONS

**Step 1.** Decorate your wooden spool if desired.

**Step 2.** Poke the rubber band through the center of the spool. It should stick out of both ends. Use a poking implement if needed.

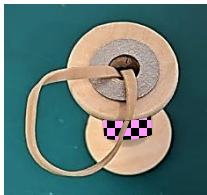


**Step 3.** Slide your piece of coffee stirrer between a flat spool end and a rubber band loop. Pull the rubber band taut against the stirrer. Tape the stirrer to the spool as shown.

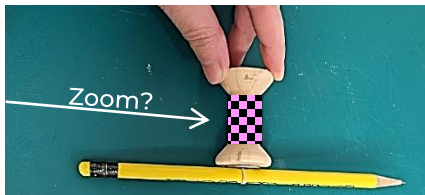
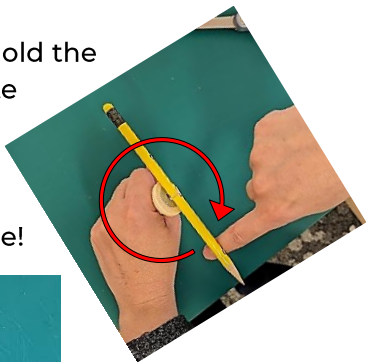


Pull the rubber band taut against the stirrer. Tape the stirrer to the spool as shown.

**Step 4.** Thread the loose end of the rubber band through the washer. Slide the pencil into the loop. Your spool racer is now complete.

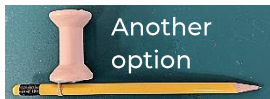


**Step 5.** Prepare to zoom. Hold the spool with one hand. Rotate the pencil with the other to wind the rubber band tight. Set your spool racer on a flat surface and release!



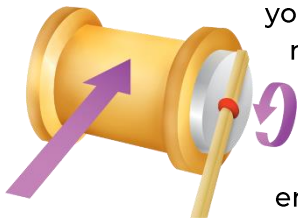
## TESTING PHASE!

- Does pencil placement affect the spool racer?
- Count your pencil winds. What number of winds results in the best ride?
- What happens if you wind the pencil in the opposite direction?
- What in the world does the washer do? Test your spool racer without it to find out.
- Test your spool racer on smoother and rougher surfaces. Which one works the best?



# LET'S TALK PHYSICS!

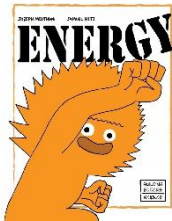
When you wind up the rubber band on your spool racer, you are storing energy for later. This kind of energy is called **potential energy**. Then, when



you release the racer, the rubber band unwinds, causing the spool to move. The potential energy transforms into **kinetic energy**, the energy of motion.

## BOOKS TO LEARN MORE

- *All About Forces* by Angela Royston
- *Amazing Activities with Force and Motion* by Anne O'Daly
- *Energy* by Joseph Midthun
- *Force and Motion* by Joseph Midthun



Source: [worldbook.com/BuildingBlocks/PhysicalScience/spool-engine](http://worldbook.com/BuildingBlocks/PhysicalScience/spool-engine)